REMARKS

The Office Action mailed November 29, 2002, has been carefully considered.

In the Office Action, the Examiner rejected claims 28, 31-47, 48-55, 61, 64-91, 97, 100-127 under 35 U. S. C. §103 as being unpatentable over U. S. Patent No. 5.963,664 to Kumar et al. ("Kumar") in view of U. S. Patent No. 5,049,987 to Hoppenstein, claims 29-30, 62-63, and 98-99 under 35 U. S. C. §103 as being obvious over Kumar and Hoppenstein, and further in view of U. S. Patent No. 6,331,871 to Taylor. In addition, the Examiner rejected claims 56-60 and 92-96 under 35 U. S. C. §103 as being obvious over U. S. Patent No. 5,929,951 to Sasakura, et al. ("Sasakura"), in view of U. S. Patent No. 5,130,794 to Ritchey ("Ritchey").

Applicants respectfully traverse the rejection.

Applicants will initially address independent apparatus claim 28, as also being representative of independent method claim 61 and independent computer program product claim 97. Claim 28 is directed to a system for generating a *stereoscopic* panoramic mosaic image pair comprising a strip generator module and a mosaic image generator module. The strip generator module is configured to generate two series of image strips. All of the image strips in each series comprise strips of a series of images of a scene as would be recorded by a camera from a respective series of positions relative to the scene. The image strips of the respective series represent strips of the respective images displaced from one another by at least one selected displacement. The mosaic image generator module is configured to mosaic the respective series of images strips together thereby to construct two panoramic mosaic images, with the panoramic mosaic images comprising the *stereoscopic* panoramic mosaic image pair providing a *stereoscopic* image of the scene as recorded over the path. (Emphasis added)

Kumar describes a system for generating a three-dimensional mosaic of a scene using a plurality of images of the scene, at least two of which have regions that overlap, but which, in general, depict the scene from differing viewpoints. In Kumar's system, information from the images is used to generate what is referred to as a "three-dimensional mosaic," which actually comprises two mosaics, one of which is referred to as an image mosaic, and the other of which is referred to as a shape mosaic. The image mosaic represents a panoramic view of the scene, while the shape mosaic

represents the three-dimensional geometry of the scene. As described in connection with FIG. 2 (column 5, line 18, et seq.), in the image mosaic, the images are aligned according to an arbitrary parametric surface extending through all of the images. This requires both parametric translation parameters and a planar motion field. The shape mosaic contains a parallax motion field that relates the three-dimensional objects that are depicted in the images to one another and to the parametric surface. The planar motion field represents motion within the parametric surface that appears in the images from source image to source image, while the parallax motion field represents motion due to parallax of the three-dimensional objects in the scene with respect to the parametric surface.

As noted above, the arrangement recited in claim 28 generates a *stereoscopic* panoramic image pair. Generally, "stereoscopic" refers to "of, like, or something used in a *stereoscope*." A *stereoscope*, in turn, is "an instrument that gives a three dimensional effect to photographs viewed through it: it has two eyepieces, through which slightly different views of the same scene are viewed *side by side*." (Emphasis added, reference from, for example, Webster's New World Dictionary of the American Language, College Edition.) From the manner in which the strip generator module is recited in claim 28 as generating the two panoramic mosaic images, it should be apparent that they provide "slightly different views of the same scene." Moreover, regardless of the particular device that a user uses to view the "slightly different views of the same scene...side by side," it should further be apparent that the two panoramic mosaic images contain similar types of information regarding the scene. Both are two-dimensional images of the same scene.

This is clearly not the case with the image and shape mosaics that comprise Kumar's "three-dimensional mosaic." As noted above, the two mosaics represent significantly different types of information. The image mosaic is generated using the parametric translation parameters and a planar motion field, whereas the shape mosaic is generated using the parallax motion field. The types of information reflected in the image mosaic and the shape mosaic are very different. Accordingly, Applicants respectfully submit that, even if the two mosaics are images (and Kumar does not appear to specifically refer to them as *images*), given that the two essentially provide very different types of information, they are not a *stereoscopic* panoramic image pair. They do not represent "slightly different views of the same scene" that, when viewed "side by side" will provide a "three-dimensional effect."

Moreover, it should be apparent that, whereas the system recited in claim 28 generates two two-dimensional images of a scene that, when viewed simultaneously by respective eyes of a viewer, provides a three-dimensional view of the scene, Kumar teaches a system that generates one two-dimensional image (the "image mosaic") of the scene and an object (the "shape mosaic") that represents a three-dimensional description of the scene. Kumar's generation of the shape mosaic requires processing to generate the "three-dimensional" description of the scene represented by the shape mosaic, which processing is not contemplated by or even required by the system recited in claim 28. The system recited in claim 28 goes directly from input images to mosaic images that provide the stereoscopic "three dimensional effect."

Accordingly, Applicants respectfully submit that Kumar neither teaches nor suggests the invention recited in claim 28.

The Examiner cited Hoppenstein as teaching dividing "the target image" into a plurality of image strips. Preliminarily, Applicants note that it is difficult to determine what the Examiner is referring to as "the target image." In point of fact, in claim 28, the images from which strips are generated are the source images, which strips are used to generate the panoramic mosaic images. (As noted in the previous Office Action response, the strip generator module is recited as generating image strips from images as would be recorded by a camera, so as to make clear that the images would not actually need to be recorded by a camera, but instead may be generated by other means, and further to make clear that the strip generator module does not have to generate, for each image strip, an entire image--instead, the strip generator module need only generate the respective image strip.) On the other hand, in Hoppenstein, it appears that the strips are the images that are to be stored. There appears to be no suggestion that the strips are mosaiced together to form a panoramic mosaic image, as set forth in claim 28. More particularly, even assuming, arguendo, that Hoppenstein does teach dividing "the target image" into a plurality of image strips, Applicants respectfully submit that there is no suggestion in Hoppenstein of generating two panoramic mosaic images that comprise a stereoscopic panoramic mosaic image pair. To the contrary, Hoppenstein teaches an arrangement that provides a single two-dimensional image of a scene that can be viewed through a lenticular lens to provide a three-dimensional effect

Moreover, even assuming, arguendo, that Hoppenstein teaches dividing an image into a plurality of strips, there is no suggestion how the strips might be used in the system described in Kumar to generate a stereoscopic panoramic image pair, as is generated by the arrangement recited in claim 28. Most notably, as noted above, Kumar describes generating the shape mosaic in connection with the parallax motion field. Claim 28 specifies that both of the panoramic mosaic images that comprise stereoscopic panoramic mosaic image pair are constructed from respective series of strips, but, even assuming arguendo that it might be apparent how Kumar's *image* mosaic might be constructed from a series of image strips, it is far from apparent how Kumar's *shape* mosaic might be constructed from a series of image strips.

Accordingly, Applicants respectfully submit that neither Kumar nor Hoppenstein, whether considered individually or in combination, teach or suggest the invention recited in claim 28.

Applicants further submit that independent method claim 61 and independent computer program product claim 97 are allowable for the reasons set forth above in connection with claim 28.

Claims 52, 85 and 121 are similar to claims 28, 61 and 97, respectively, except that they require there to be two different displacements. Applicants respectfully submit that claims 52, 85 and 121 are allowable for the reasons set forth above in connection with 28, 61 and 97.

Applicants will address apparatus claim 56, as also representative of method claim 92. Claim 56 is directed to a system for displaying a stereo panoramic image to a viewer, the system comprising a panoramic screen, a plurality of projectors, and a viewing arrangement. Each of the projectors is disposed to project a respective portion of one of a plurality panoramic images in overlapping fashion on the screen, each panoramic image being for viewing by a respective one of a viewer's eyes. The viewing arrangement is recited as facilitating transmission of a respective one of the images to each of the viewer's eyes thereby to facilitate stereoscopic viewing of the panoramic image defined by the panoramic images.

As noted above, the Examiner rejected claim 56 under 35 U. S. C. §103 as being obvious over Sasakura in view of Ritchie. In the portion of Sasakura cited by the Examiner, the patent describes a head-mounted display device that includes two eyepieces, one for each eye, with each eyepiece directing an image to the respective eye. The Examiner recognizes that Sasakura does not suggest

the claimed "plurality of projectors," and cites Ritchie as teaching those elements, particularly FIG. 36 and column 32, lines 56, et seq. While Ritchie does, in fact, teach a display arrangement that includes a plurality of projectors, Applicants respectfully submit that it does not teach projectors for displaying a respective one of a plurality of panoramic images to a viewer in overlapping fashion on a screen. Indeed, returning to Sasakura, Applicants respectfully submit that Sasakura does not suggest a viewing arrangement that facilitates transmission of a respective one of a plurality of images that are projected onto a screen in overlapping fashion, to a respective eye to facilitate stereoscopic viewing of a panoramic image defined by the panoramic images. Indeed, neither Sasakura nor Ritchie suggest any overlap in images projected onto a screen, as required in the claim. Accordingly, Applicants respectfully submit that neither Sasakura nor Ritchie, whether considered individually or in combination, teach or suggest the invention recited in claim 56.

Applicants further submit that method claim 92 is allowable for the reasons described above in connection with claim 56.

Applicants further submit that dependent apparatus claims 57-60 and method claims 93-96 are allowable at least for the reason that they depend from allowable independent claims 56 and 92, respectively.

In view of the above, Applicants respectfully traverse the rejection.

It is believed that this application is allowable, and a notice of allowability is respectfully solicited.

Respectfully submitted,

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